Z. Säugetierkunde 55 (1990) 331–339

ISSN 0044-3468

Sparring in White-tailed deer *(Odocoileus virginianus)*

By G. Schwede, S. Hölzenbein, and H. Hendrichs

Department of Ethology, University of Bielefeld, FRG, and Conservation and Research Center, National Zoological Park, Front Royal, Virginia, USA

Receipt of Ms. 10. 7. 1989
Acceptance of Ms. 9. 1. 1990

Abstract

The occurrences of sparring, aggressive, and sexual behavior in bucks of different antler classes were studied in a white-tailed deer *(Odocoileus virginianus)* population in Virginia from September 11 until December 31 1983. Sparring activity showed two distinct peaks. One preceded the rut, the other was observed at the height of the rut. At the first peak bucks of higher antler classes predominated whereas bucks of the lower antler classes were mainly involved at the second peak. Most aggressive behavior was recorded at the height of the rut. Bucks of higher antler classes showed significantly more aggressive behavior than bucks of lower antler classes. Sexual behaviour was predominantly shown by bucks of higher antler classes. Our findings confirm the assumption that sparring in older males serves to establish a social hierarchy before the actual breeding season starts. In young bucks sparring could serve as means to gain fighting and social experience. During the height of rut aggressive postures were employed by older males to confirm their rank and to achieve access to females in estrus.

Introduction

The shape and mass of antlers can play an important role in determining the social rank of cervids. While shape and mass of antlers in red deer *(Cervus elaphus)* are relearned every year by „Fighting Play" and „Shadow Fighting", recognition of the relative status value of the own and of other antlers has to be obtained by sparring (Bubenik 1968). Sparring behavior in connection with the rut has been observed and described in many cervids, including North American moose *(Alces alces)* (Geist 1963); Axis deer *(Axis axis)* (Schaller 1967); white-tailed deer *(Odocoileus virginianus)* (Brown 1971; Hirth 1977; Michael 1968), and mule deer *(Odocoileus hemionus)* (Kucera 1978; Wachtel et al. 1978) and many other cervids. In white-tailed deer, despite the extensive literature on behavioral aspects of this species, few detailed and quantitative data analyzing the role of sparring are available. Hirth (1977) concluded that sparring permits the establishment of a hierarchy before the actual breeding season starts and that older bucks participated more in sparring early in the breeding season than later on. The literature on sparring in mule deer is more extensive and detailed (Kucera 1978; Wachtel et al. 1978; Koutnik 1983). Koutnik (1983) suggested that dominant bucks initiate sparring to reinforce their social status prior to the breeding season, thus insuring access to females, and that sparring in young bucks primarily serves as a means to gain social experience by interacting with older bucks in a relatively low risk, ritualized agonistic encounter. Kucera (1978) and Wachtel et al. (1978) came to similar conclusions.

The purpose of this study was a.) to provide quantitative data on sparring in white-tailed deer b.) to correlate frequencies of sparring with frequencies of aggressive and sexual behavior and c.) to differentiate between bucks of different antler classes in these behavior categories.